



Clinical Update

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Dental management of the PPD positive tuberculin skin test patient

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Introduction

"Tuberculosis (TB) is a disease caused by a microorganism called *Mycobacterium tuberculosis*."¹ If not treated properly, TB disease can be fatal. TB is spread through the air when a person with active TB disease of the lungs or throat coughs or sneezes. Not everyone infected with TB bacteria develops TB disease. People who are infected but do not have TB disease are diagnosed with Latent TB Infection (LTBI). This population of infected people may not feel sick or exhibit any symptoms. But, some people with latent TB infection eventually develop TB disease. TB bacteria become active if the immune system can't stop them from growing.¹

The presentation of TB disease depends on where in the body the TB bacteria are growing. TB bacteria usually grow in the lungs. "TB in the lungs may cause symptoms such as:

- a bad cough lasting 3 weeks or longer
- pain in the chest
- coughing up blood or sputum

Other symptoms of active TB disease include weakness, fatigue, weight loss, loss of appetite, chills, fever, and night sweats."¹

Case report

"A sailor assigned to Carrier Air Wing (CVW) 14, attached to USS Ronald Reagan (CVN 76), was admitted to Naval Medical Center San Diego on July 14, 2006 with active Tuberculosis. The sailor began treatment with antibiotics and was placed in quarantine until no longer considered to be infectious."²

Because the TB-infected sailor had been aboard the ship and was a potential source of exposure, all embarked personnel had to be screened for TB. "The initial screening for TB, which began on July 18, 2006, included selected air wing and ship personnel and civilian guests and revealed that approximately 4.4 percent (34 of 776) of the subjects tested positive for TB."²

A second round of TB screening for shipboard and air wing personnel was completed shortly thereafter. "Ninety-four point one percent of the 4977 Naval personnel exposed during this incident completed the second round of screening. To date, a total of 139 Naval personnel have been diagnosed with LTBI. Due to the

very low conversion rate among second round personnel, additional efforts to locate and screen personnel lost to follow-up are not recommended."²

"The civilian contact investigation has also reached completion. 1170 of the 1172 (99.8 percent) identified civilian guest riders were contacted and initial screening results were voluntarily provided by 45 percent of the civilian guests (532 of 1172). Of the 38 civilian guests designated as close contacts of the index case, one was a self-reported prior positive and wasn't retested, and 35 of the remaining 37 (95 percent) completed an initial test. Of the 35, there was one documented new positive (3 percent), one prior positive who was erroneously retested, and 33 were negative. Of the 33 with a negative result, 24 (73 percent) completed a second test and all were negative. Because of the low risk among this close-contact group, it was decided to recommend no further screening of the other civilian guests."²

"No additional cases of active TB were found in any crew member or civilian guest who was aboard the ship. No additional screening is recommended except for those who have been designated as 'close contacts' of the index case."² Although the total percentage of infected personnel is relatively low, the serious nature of reporting and managing this incident is demonstrated by the prompt response of the Commanding Officer and medical/research personnel.

Management of patients with positive tuberculosis skin tests (TST)

Upon conducting a medical history on patients who present for dental treatment, a patient who reports a recent positive TST and has never received medical treatment should be referred promptly for a medical evaluation to determine possible infectiousness. Standard Form 513 should be completed and should remain in the patient's dental record. Such patients should not remain in the dental-care facility any longer than required to evaluate their dental condition and arrange a referral. While in the dental health-care facility, the patient should be isolated from other patients and dental health-care providers, wear a surgical mask when not being evaluated, or be instructed to cover their mouth and nose when coughing or sneezing. Patients should be cleared by their physician to receive dental treatment and to take the prescribed

medication prior to receiving any elective dental treatment.³⁻⁵

If urgent dental care must be provided for a patient who has suspected or confirmed infectious TB disease, dental care should be provided in a setting that allows TB airborne infection isolation. “Respiratory protection (fit-tested, N95 disposable respirator) should be used while performing procedures on such patients.”⁴ Infection control procedures established at site-specific dental and medical treatment facilities should be followed.³⁻⁵

Typically, patients with a positive TST and no history of receiving medical treatment will be prescribed isonicotinic acid hydrazide (INH) medication for 6-9 months. In the absence of clinically active disease, a regimen of prophylactic INH may be started to prevent clinical disease. Patients should be taking the prescribed drug regimen for a minimum of 10 days prior to beginning elective dental treatment, at which point, these patients are no longer considered infectious and can be treated in a normal manner.⁶ “Dental considerations for patients taking INH include the following:⁷

- no precautions against use of local anesthetics/vasoconstrictors
- xerostomia effects
- cytochrome P450 effects are prominent, and should be considered in patients needing invasive dental procedures. Examples of cytochrome P450 effects:
 -CYP 450 inhibitor (increases levels of benzodiazepines)
 -CYP inducer (decreases the levels/effects of CYP 2D6 substrates such as codeine, hydrocodone, oxycodone, tramadol)

A patient that reports a history of positive TST and has received partial or interrupted medical treatment should also be referred for a medical consultation. Regardless of what type of treatment the patient received, any individual with a history of TB should be approached with initial caution. The dentist should obtain a medical history, including diagnosis and dates and type of treatment. Treatment duration of less than 6-9 months requires consultation with the physician to determine the patient’s status. A good review of systems is important with these patients, and referral to a physician is indicated if questionable signs or symptoms are present. Patients should give a history of periodic physical examinations and chest radiographs to check for evidence of reactivation of the disease. The patient found free of active disease and immunosuppression may be treated without special precautions.

A patient who reports a positive TST and has received medical treatment should be considered clear for receiving dental treatment. See Figure 1.

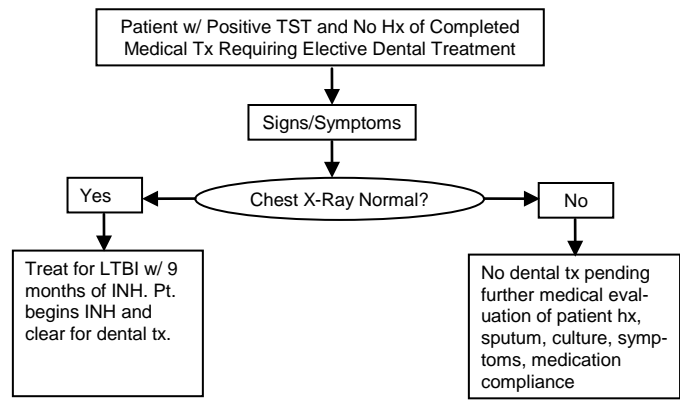


Figure 1. Dental Management⁶

Conclusion

TB is one of the deadliest infectious diseases in the world. The huge reservoir of infected individuals, both in the United States and in other countries, represents a source of new disease unless effective identification and containment of infection and disease take place.

Conducting a thorough medical history on every patient, referring those patients requiring medical evaluation prior to beginning any dental procedure, and following infection control procedures established by site-specific dental and medical treatment facilities serve as important preventative measures that can reduce the spread of TB.

References

1. Centers for Disease Control and Prevention. Questions and answers about TB. 2005. http://www.cdc.gov/tb/faqs/qa_introduction.htm. Accessed 22 May 2007.
2. Navy Environmental and Preventive Medicine Unit Five News. <http://www.nepmu5.med.navy.mil>. Accessed 6 April 2007.
3. Centers for Disease Control and Prevention. Guidelines for Preventing the Transmission of Mycobacterium Tuberculosis in Health-Care Settings. 2005 Dec;54:RR-17. <http://www.cdc.gov/mmwr/PDF/rr/rr5417.pdf>. Accessed 22 May 2007.
4. Centers for Disease Control and Prevention. Guidelines for Infection Control in Dental Health Care Settings. 2003 Dec;52:RR-17:1-61. <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5217a1.htm>. Accessed 22 May 2007.
5. Little JW, Fallace, DA, Miller CS Rhodus NL. Dental Management of the Medically Compromised Patient. 6th ed. St. Louis: Mosby; 2002.
6. Centers for Disease Control and Prevention. Treatment of Tuberculosis. 2003 Jun;52:RR11:1-77 <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5211a1.htm>. Accessed 22 May 2007.
7. Wynn RL, Meiller TF, Crossley HL. Drug Information Handbook for Dentistry. 11th ed. Hudson, OH: Lexi-Comp; 2006. pp. 821-822.

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